

Knowledge and awareness about dental implant as an option for replacement of teeth: a survey among saudi adults

Dental implant as an option for replacement of teeth

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Abstract

Aim: It is important to evaluate the level of knowledge among the laypersons towards dental implants because it allows patients to select the proper options for teeth replacement. The aim of this study was to evaluate the knowledge and awareness of dental implants among a group of the Saudi population. **Material and Method:** This was a cross-sectional survey conducted in 2017 among a group of the Saudi population. An electronic questionnaire was distributed using social media. This questionnaire was adapted from the literature. The data were collected in the form of an Excel file and then it was coded, entered and analyzed using SPSS software program. **Results:** Media was the most common source of information reported by 37.2% followed by dentists. Although most of both genders reported the fixed bridge as the first choice, there was a statistically significant difference in percentages. There was a significant difference in responses according to the age group while no significant difference was found between the different education levels for the same question. However, a significant difference was found between the education levels in response to the self-evaluation of the treatment with dental implants. **Discussion:** Approximately 80% of the study respondents had some knowledge about dental implant. This result was similar to that reported by many other studies where the reported level of knowledge ranged from 70% and 77%. The knowledge about dental implant has been improved in the last decades. Only 9% of respondents chose fixed prosthesis as a better option for replacement. This reflects the high level of awareness among participants about fixed prosthesis as a better solution because of its advantages over the removable prosthesis. **Conclusion:** The level of awareness about dental implant is high but the detailed information is missing. The study also showed the need for a more organized program to correct and to provide more information about treatment with dental implants.

Keywords

Knowledge; Dental Implant; Survey; Teeth Replacement

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Introduction

Prosthetic rehabilitation of missing teeth has been greatly evolved especially with the introduction of dental implants. Efficacy of dental implants, since its introduction in 1982, has been successfully confirmed by many of long-term clinical studies [1,2]. Its first use was for edentulousness as it was placed in the mandible to hold a denture which presented improvement in retention, stability, and support, as well as the patient’s quality of life was clearly improved [1-5]. In the present time, dental implants are being used widely for both partially and completely edentulousness. This makes the dental implants well known in the dental community and even becomes a part of the dental curriculum and academic education [6-9]. Moreover, treatment of partially or completely edentulous patients with conventional removable dentures becomes less popular or less preferred because of the undesirable complications of these dentures. In addition, treatment with dental implants particularly in the esthetic zone becomes the first choice from biologic and esthetic points of view [10-12]. On the other hand, knowledge and awareness about dental implants among people increased significantly. This increase, however, varies considerably between different countries. In Saudi Arabia, Al-Johany et al. [19] found 66% of Saudi population is aware about dental implants. Salonen et al. [13] reported that the awareness of dental implants among the target population was only 29% while, Best [14] reported 64% of awareness among the questioned people. Tepper et al. [15], however, reported a higher percentage with 72% of awareness. Fortunately, it has been reported that the acceptance and attitude of patients toward dental implants increased after increasing the knowledge and awareness among those patients about dental implants and the various available treatment options with dental implants [15-18]. Therefore, it is of a great importance to evaluate the level of knowledge among the laypersons towards dental implants and hence, the aim of this study was to evaluate the knowledge of dental implants among a group of the Saudi population.

Material and Method

This was a cross-sectional survey conducted in the period from May to August 2017 among a group of Saudi population. An electronic questionnaire was distributed as web-based questionnaires. This questionnaire was adapted from some previous studies [19,20]. It consisted of two sections; the first one related to the demographic information including gender, age group, and education level. The remaining questions related to the knowledge of dental implants. One question related to the presence or absence of missing teeth among the questioned people, one question was whether the participant had an implant and another question related to the source of information about dental implants. The sample size was calculated using equation of proportion estimation at 0.95 confidence interval and 0.05 error of estimation. The data were collected in the form of an Excel file and then it was coded, entered and analyzed using SPSS software program. The demographic data were presented in the form of frequency and percentage. Chi-squared test was utilized to test the significance of responses among participants according to their gender, age, and education. A p-value less than 0.05 was considered significant.

Results

A total of 634 questionnaires were electronically received. Female participants were much higher than males (83.3% and 16.7%, respectively). Participants from the age group 21 - 40 years were the most prevalent (75.2%) followed by participants from the age group > 40 years (20.5%), and only 4.3% of the participants were from the age group < 20 years. Most participants were at the university level (70.7%), followed by secondary level participants (23.8%), and only 35 participants (5.5%) were postgraduate (Table 1). More than half of the participants (53%) had missing teeth while 47% reported they had no missing teeth. The majority of participants (93.4%) reported that they had no dental implants while only 6.6% reported they had dental implants (Figure 1). Media was the most common source of information reported by 37.2% followed by dentists (31.9%) and friends (30.9%) (Figure 2). Regarding the opinion of the questioned participants for the replacement of the missing teeth, there was a significant difference ($P < 0.05$) between genders. Although most of both genders reported the fixed bridge as the first choice there was a statistically significant difference in proportions of males and females regarding this question. Similarly, there was a significant difference in responses

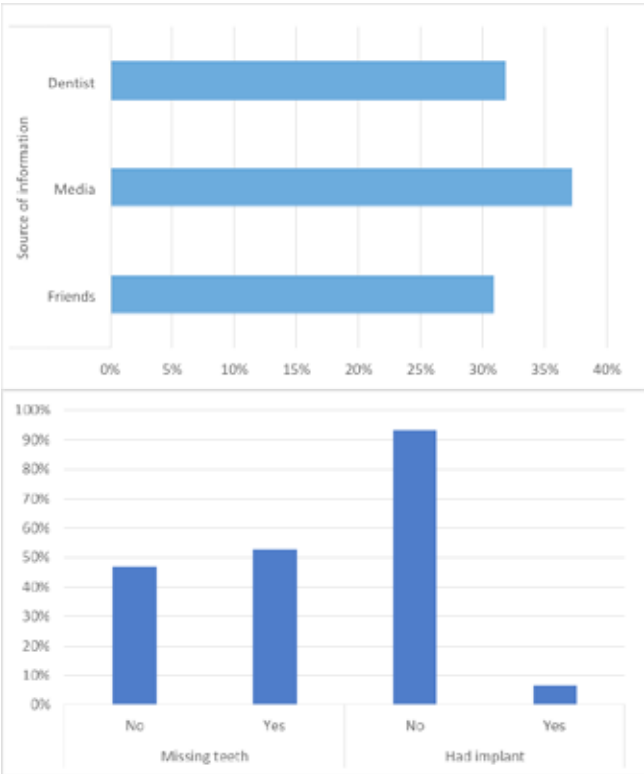


Figure 1. Responses to missing teeth and presence of dental implant

Table 1. Characteristics of the study sample

		Frequency	Percent
Gender	Male	106	16.7
	Female	528	83.3
Age	< 20 years	27	4.3
	21 - 40 years	477	75.2
	> 40 years	130	20.5
Education	Secondary	151	23.8
	University	448	70.7
	Postgraduate	35	5.5

Table 2. Responses of the study subjects according to gender, age groups, and education level

			Gender		Age			Education		
			Male	Female	< 20 years	21 - 40 years	> 40 years	Secondary	University	Postgraduate
Options for replacement of missing teeth	Fixed bridge	Count	91	421	15	389	108	122	359	31
		%	85.8%	79.7%	55.6%	81.6%	83.1%	80.8%	80.1%	88.6%
	Partial denture	Count	2	33	4	25	6	8	26	1
		%	1.9%	6.3%	14.8%	5.2%	4.6%	5.3%	5.8%	2.9%
	Complete denture	Count	7	15	3	16	3	3	17	2
		%	6.6%	2.8%	11.1%	3.4%	2.3%	2.0%	3.8%	5.7%
Successful of dental implant	No replacement	Count	6	59	5	47	13	18	46	1
		%	5.7%	11.2%	18.5%	9.9%	10.0%	11.9%	10.3%	2.9%
	Unsuccessful	Count	2	4	0	5	1	1	3	2
		%	1.9%	0.8%	0.0%	1.0%	0.8%	0.7%	0.7%	5.7%
	I have no implant	Count	95	456	21	424	106	124	402	25
		%	89.6%	86.4%	77.8%	88.9%	81.5%	82.1%	89.7%	71.4%
Awareness about dental implant	Accepted	Count	3	26	1	19	9	13	16	0
		%	2.8%	4.9%	3.7%	4.0%	6.9%	8.6%	3.6%	0.0%
	Successful	Count	6	42	5	29	14	13	27	8
		%	5.7%	8.0%	18.5%	6.1%	10.8%	8.6%	6.0%	22.9%
	I have heard about it	Count	50	297	18	253	76	93	238	16
		%	47.2%	56.3%	66.7%	53.0%	58.5%	61.6%	53.1%	45.7%
Dental implant is a surgical procedure	I'm not sure	Count	15	44	2	51	6	14	41	4
		%	14.2%	8.3%	7.4%	10.7%	4.6%	9.3%	9.2%	11.4%
	I have not heard about it	Count	9	32	0	34	7	6	33	2
		%	8.5%	6.1%	0.0%	7.1%	5.4%	4.0%	7.4%	5.7%
	I Know it	Count	32	155	7	139	41	38	136	13
		%	30.2%	29.4%	25.9%	29.1%	31.5%	25.2%	30.4%	37.1%
Where the implant is placed	No	Count	11	56	4	51	12	23	41	3
		%	10.4%	10.6%	14.8%	10.7%	9.2%	15.2%	9.2%	8.6%
	Yes	Count	95	472	23	426	118	128	407	32
		%	89.6%	89.4%	85.2%	89.3%	90.8%	84.8%	90.8%	91.4%
	Tooth	Count	1	19	1	13	6	7	13	0
		%	0.9%	3.6%	3.7%	2.7%	4.6%	4.6%	2.9%	0.0%
Longevity of dental implant	Bone	Count	42	171	5	150	58	47	151	15
		%	39.6%	32.4%	18.5%	31.4%	44.6%	31.1%	33.7%	42.9%
	Gum	Count	41	225	12	209	45	61	192	13
		%	38.7%	42.6%	44.4%	43.8%	34.6%	40.4%	42.9%	37.1%
	Don't know	Count	22	113	9	105	21	36	92	7
		%	20.8%	21.4%	33.3%	22.0%	16.2%	23.8%	20.5%	20.0%
Attitude toward dental implant	< 5 years	Count	20	75	11	73	11	24	65	6
		%	18.9%	14.2%	40.7%	15.3%	8.5%	15.9%	14.5%	17.1%
	5 - 10 years	Count	30	154	4	141	39	44	134	6
		%	28.3%	29.2%	14.8%	29.6%	30.0%	29.1%	29.9%	17.1%
	10 - 20 years	Count	29	115	6	103	35	33	105	6
		%	27.4%	21.8%	22.2%	21.6%	26.9%	21.9%	23.4%	17.1%
	> 20 years	Count	27	184	6	160	45	50	144	17
		%	25.5%	34.8%	22.2%	33.5%	34.6%	33.1%	32.1%	48.6%
	Agree	Count	57	241	16	206	76	77	201	20
		%	53.8%	45.6%	59.3%	43.2%	58.5%	51.0%	44.9%	57.1%
	Not sure	Count	30	138	6	141	21	39	123	6
		%	28.3%	26.1%	22.2%	29.6%	16.2%	25.8%	27.5%	17.1%
	Maybe	Count	17	127	5	112	27	29	107	8
		%	16.0%	24.1%	18.5%	23.5%	20.8%	19.2%	23.9%	22.9%
	Not agree	Count	2	22	0	18	6	6	17	1
		%	1.9%	4.2%	0.0%	3.8%	4.6%	4.0%	3.8%	2.9%

Success rate of dental implant	30 %	Count	11	45	4	41	11	16	35	5
		%	10.4%	8.5%	14.8%	8.6%	8.5%	10.6%	7.8%	14.3%
	50 %	Count	29	148	4	138	35	33	135	9
		%	27.4%	28.0%	14.8%	28.9%	26.9%	21.9%	30.1%	25.7%
	70 %	Count	35	213	8	192	48	62	172	14
		%	33.0%	40.3%	29.6%	40.3%	36.9%	41.1%	38.4%	40.0%
	> 90 %	Count	31	122	11	106	36	40	106	7
		%	29.2%	23.1%	40.7%	22.2%	27.7%	26.5%	23.7%	20.0%
Expectation about dental implant	I don't know	Count	19	89	2	87	19	24	79	5
		%	17.9%	16.9%	7.4%	18.2%	14.6%	15.9%	17.6%	14.3%
	Poor	Count	0	2	0	2	0	1	1	0
		%	0.0%	0.4%	0.0%	0.4%	0.0%	0.7%	0.2%	0.0%
	Fair	Count	7	56	1	52	10	14	44	5
		%	6.6%	10.6%	3.7%	10.9%	7.7%	9.3%	9.8%	14.3%
	Good	Count	40	159	12	136	51	50	138	11
		%	37.7%	30.1%	44.4%	28.5%	39.2%	33.1%	30.8%	31.4%
Oral hygiene with dental implant	No need	Count	40	222	12	200	50	62	186	14
		%	37.7%	42.0%	44.4%	41.9%	38.5%	41.1%	41.5%	40.0%
	More than natural teeth	Count	5	4	0	5	4	2	6	1
		%	4.7%	0.8%	0.0%	1.0%	3.1%	1.3%	1.3%	2.9%
	Similar to natural teeth	Count	31	261	12	219	61	73	213	6
		%	29.2%	49.4%	44.4%	45.9%	46.9%	48.3%	47.5%	17.1%
		Count	70	263	15	253	65	76	229	28
		%	66.0%	49.8%	55.6%	53.0%	50.0%	50.3%	51.1%	80.0%

according to the age group while no significant difference ($P > 0.05$) was found between the different education levels for the same question. However, a significant difference was found between the education levels in response to the self-evaluation of the treatment with dental implants. Most of those who had dental implants reported that the treatment was successful. Difference between responses according to age groups was found in relation to the question “Where the dental implants are placed?” Most of respondents from the age groups < 20 years and 21 – 40 years reported the gum as the site where the implant is placed (44.4% and 43.8%, respectively) while most respondents (34.6%) from the age group > 40 years selected the bone as the place for dental implants (Table 2).

Responses to the self-evaluation of dental implant success rate were significantly different among age groups. A 5-year success rate of the implant was reported by 40% of those who aged < 20 years. Additionally, there were significant differences between the different age groups in responses to the question “What is your attitude about dental implant?” Although most responses were reported as agree, there was a significant difference between different age groups (54.3%, 43.2%, and 58.5% for the age groups < 20 years, 21 – 40 years, and > 40 years, respectively). Factors reported that prevent respondents to have implants were reported as follows: high cost (reported by 40%) followed by fear of surgery (reported by 26%), and 10% of respondents reported both factors. About 24% of respondents said that they do not know why dental implant is preferred than fixed and removable prostheses while 13% reported that dental implant is more comfortable, 11% reported that dental implant is more esthetic, and 10% reported that dental implant is useful in oral rehabilitation. In relation to the question about cleaning dental implants, there was a significant difference between

both genders. Most of the male participants reported that dental implants require cleaning similar to the natural teeth while most responses of females were that dental implants require cleaning more than natural teeth. Participants with different educational level were significantly different regarding the question of dental implants whether cleaning is required similar to the natural teeth. No significant difference was found in relation to age groups. The remaining knowledge questions revealed no significant difference between all participants. More details about responses are presented in Table 2.

Discussion

The present study was carried out to assess the knowledge among Saudi people. Our target population was randomly selected. An electronic version of the questionnaire was used to share it with more people especially by using the new technology of social media. Although the vast majority of respondents in the current study had no dental implants, about half of the subjects had heard about dental implant and nearly one third know about it. This means that approximately 80% of subjects have some knowledge about dental implant. This result seems to be similar to that reported by Zimmer at al. [21], in which the level of knowledge was 77%. Also, the result of this study is similar to that reported by Tepper el al. [15] and Berge [22] where the reported level of knowledge was 72% and 70%, respectively. However, the level of knowledge in this study is higher than that reported by Al-Johany el al. [19] which was conducted among Saudi population in 2010 and the level of knowledge was 66%. This confirms that the knowledge about dental implant has increased significantly in the recent years. Only 9% of respondents chose removable prosthesis for the replacement of one or more missing teeth, while most respondents chose fixed

partial denture (bridge) as a better option for replacement. This reflects the high level of awareness among participants about fixed prosthesis as a better solution because of its advantages over the removable prosthesis. This result comes in the same line with that reported by Tepper et al. [15], Zimmer et al. [21], and Al-Johany et al. [19], in which fixed prosthesis was more preferred more esthetically pleasant by the study subjects. In the current study, the media was the main source of information about dental implant followed by dentists and finally, by the friends and relatives. This result contrasts with the finding of Al-Jahory et al. study [19], in which friends and relatives were the main source of information followed by dentists and finally, by the media and internet. However, the finding of the present study is comparable with that reported by Zimmer et al. [21] who found the media as the main source of information. Also, our result is similar to that of Berge [22], Akagawa et al. [23], and Best [14] who reported the media as the main source of information about dental implant. The difference between our result and that of Al-Jahory might be related to advancement and new technology of media. Despite it was found that the study subjects have a high level of knowledge about dental implant, their awareness about site of implant was low. About 42% of respondents chose the gum as the site where dental implant is placed followed 33.6% who chose bone while 21.3% reported that they do not know where the dental implant should be placed. About 24% of subjects reported that they do not know about the advantages of dental implant. This result refers to the shortage of information and the need for more detailed information. Dentists as well as media (via public programs) play an important role in this regard. High cost and fear of surgery were the most of the reasons reported by subjects which prevent them to have dental implants. This result is in agreement with that reported by Tepper et al. [15] and Kent [24].

However, some limitation of our study should be noted. The electronic version of the questionnaire can only be accessed by those who can use the new technology and/or social media and those who can read and write. On the other hand, there is still a high number of illiterate people who cannot reach such technology. Face to face interview with those subjects maybe useful. Therefore, future studies among a larger sample with variant characteristics are highly recommended.

Conclusion

Within the limitation of the present study it can be concluded that the level of awareness about dental implant is high but the detailed information is missing. The study also showed the need for more organized program to correct and to provide more information about treatment with dental implants.

Scientific Responsibility Statement

The authors declare that they are responsible for the article's scientific content including study design, data collection, analysis and interpretation, writing, some of the main line, or all of the preparation and scientific review of the contents and approval of the final version of the article.

Animal and human rights statement

All procedures performed in this study were in accordance with

the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. No animal or human studies were carried out by the authors for this article.

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Conflict of interest

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